A NEW COMMENSAL HYDROZOAN, EUGYMNANTHEA CIRRHIFERA N. SP. FROM HACHINOHE

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A NEW COMMENSAL HYDROZOAN, *EUGYMNANTHEA CIRRHIFERA* N. SP. FROM HACHINOHE[1)]

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Takao Hoshiai of the Station found a commensal *Eugymnanthea* sp. in the soft part of *Mytilus edulis* which was collected at the entrance of the intake-duct of the cooling sea-water of the Hachinohe Thermal Power Station, Aomori Prefecture. The similar species which has cirri was also found at Kesennuma, Miyagi Prefecture, and the species found at Hachinohe was dealt with in this paper. Commensal hydrozoans in pelecypods which have been described to date are the following species i.e. *Eugymnanthea inquilina* (Palombi 1935), *Mytilhydra polimantii* (Cerruti 1941), *Ostreahydra japonica* (Yamada 1950) and *Eugymnanthea ostrearum* (Mattox and Crowell 1951). When the structures of the hydroid and medusa of the Hachinohe species were compared with those of other commensal species, it was concluded that it represents a new species.

The characteristic structure of the medusa of the present species is the cirri. The cirri of the medusae of the previously known species have not been described, but in 1963, according to the personal communication from Dr. Tôhru Uchida, he found two medusa of *Eugymnanthea* sp. with cirri in the plankton at Naples in 1958. When the structure of the medusa of the present species was compared with his unpublished figure the young ones of the former are found to be far larger than the adult of the latter which has well developed gonad (about 0.8 mm). It is quite evident that those two species are distinguishable from one another though both of the medusae have cirri.

Before going further, the writer thanks Prof. Eturô Hirai, the Directer of the Marine Biological Station of Asamushi, Tôhoku University, for his supervision during the course of this investigation, and to Drs. Arika Kimura and Makoto Toriumi for their advices on the nomenclature. The writer takes this opportunity to express her deep gratitude to the Biological Laboratory of the Imperial Household and Prof. Mayumi Yamada, Hokkaido University, for kindly providing her with informations on the important literatures. The writer also expresses her thanks

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to Mr. T. Hoshiai of the Station for his kindness to collect *Mytilus edulis* at Hachinohe.

MATERIAL AND METHOD

To obtain the commensal hydrozoan, *Mytilus edulis* were collected from the Same harbour at Hachinohe and from the entrance of the intake-duct of the cooling sea water of the Hachinohe Thermal Power Station in June and October in 1961, in October in 1962, and in April and October in 1963. *M. edulis* could be kept in running sea water for one to three months in the laboratory. The polyps of *Eugymnanthea* sp. were sucked up by the pipet from the surfaces of the mantle, the palp, the gill, the foot and other soft parts of *M. edulis*, and they were removed to the petri-dishes. Though the polyps which were removed from the host did not attach to the petri-dish, formation of the medusa bud in the laboratory was observed after two to three days at about 15–20°C in any seasons.

OBSERVATION

Polyp: The polyps of the present species were found attached on the soft parts of one or more years old *M. edulis* which has developed gonad. The polyps were found in 20 to 30 per cent of the male and 70 to 80 per cent of the female *Mytilus*. The polyps are found on the mantle and the rabial palps more than on the other tissues, and those which attached on the mantle near the rabial palp were larger than those which attached on the other tissues. The polyps counted were from 30 to 200 or more in a *Mytilus* respectively.

The plyps are simple, solitary and tapering toward the base, and have no perisarc. Nematocysts were observed over the whole column and in the batteries on the tentacles. The polyps are about 0,5 to 5 mm in height and about 0,2 to 0.3 mm in width, and milky white in color. There are 18 to 28 filiform tentacles in a single whorl. The hypostome is a slightly elevated cone. The basal or pedal disc is a flattened expansion, and its undersurface (Fig. 1 and Fig. 3, a) is slightly concave.

Bydding from polyp to polyp: The polyps which produced the buds of new polyps were found especially in spring to summer. The buds of the polyps were usually one or two in number and a case which produced five buds was observed (Fig. 3, b). The buds of the polyps, liberated from the mother polyps after completion of the new polyps were observed.

Medusa: Many medusae buds were found from summer to autumn on the polyps, but none in winter and spring. When the polyps which had no medusae buds in any season were removed to the petri-dish, and kept at 15 to 20°C in the laboratory for two or three days, the medusa buds appeared (Fig. 3, a). A medusa bud arises from a polyp near the basal part, at about one-fourth of the column, and is

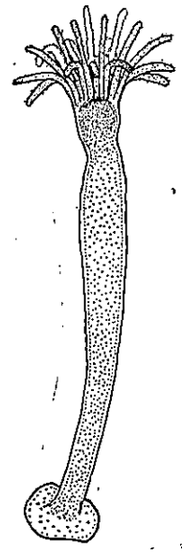


Fig. 1. A polyp of *Eugymnanthea cirrhifera* n. sp. X 23.

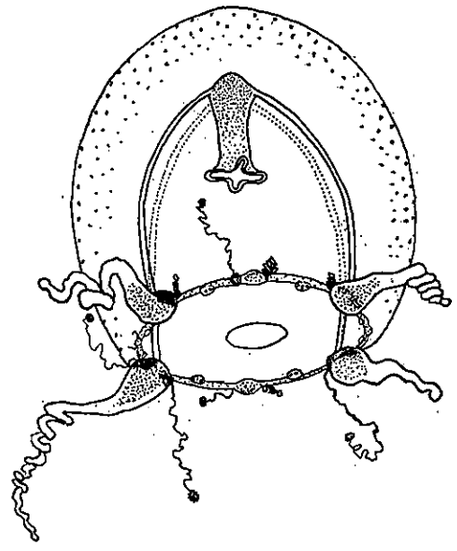
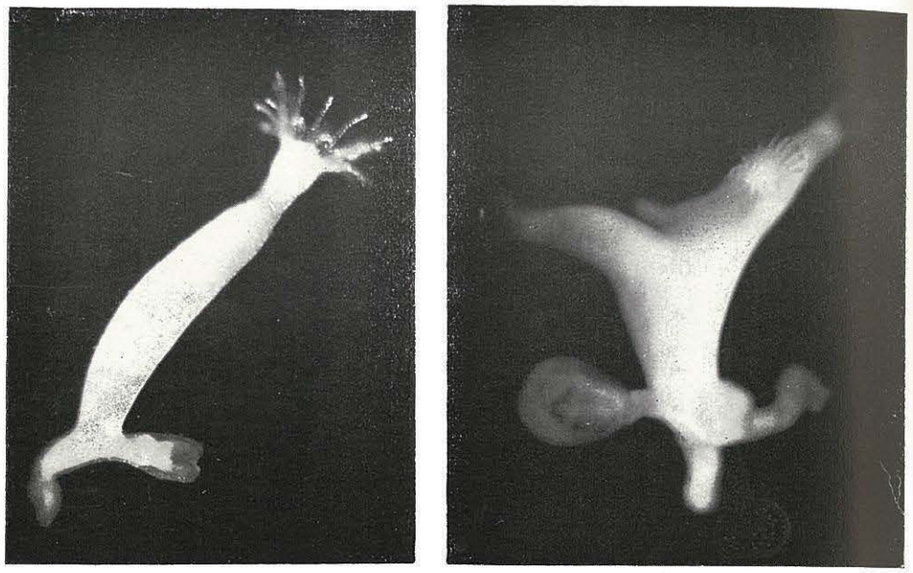


Fig. 2. A medusa, five days after liberation. X 19.

a transparent and cylindrical process. After about five to seven days, the medusa bud became ovoid and radial canal rudiment was observed in the bud (Fig. 3, b). After about ten days, at the later stage of the development of the medusa, the tentacles of the polyp began to reduce, then a striking reduction in the size of the polyp was observed. When the medusa became free swimming in a petri-dish, it carried a small remnant of the polyp with it. This remnant was removed from the medusa after about two or three hours. In the present observation, the regeneration to a new one from the remnant of the polyp was not observed.

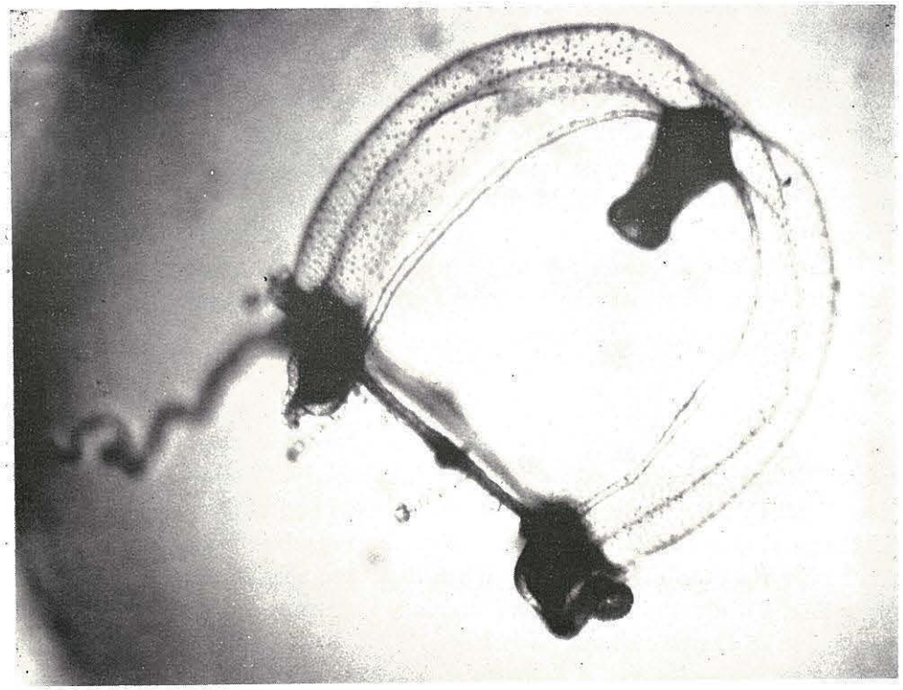
At the liberation of the young medusa, the umbrella was half-egg-shaped, 1,5 to 2,0 mm in height and nearly of the same width (Fig. 3, c). The jelly was transparent, with uniform thickness, and had a small concavity at the tip of the exumbrella. The nematocysts extended all over the surface of the exumbrella. The manubrium occupied one-third of the height of the umbrella cavity, and is orange in color. The mouth has four simple lips. Radial canals were four and transparent. The circular canal was green in color. There are four simple perradial marginal tentacles and four interradial tentacle bulbs. There are eight statocyts between the tentacles and the tentacle bulbs were observed. Each statocyst contains two to four statoliths. The tentacle bulbs or swelling of the perradial tentacles are dark orange in color, with dark belts on the dorsal



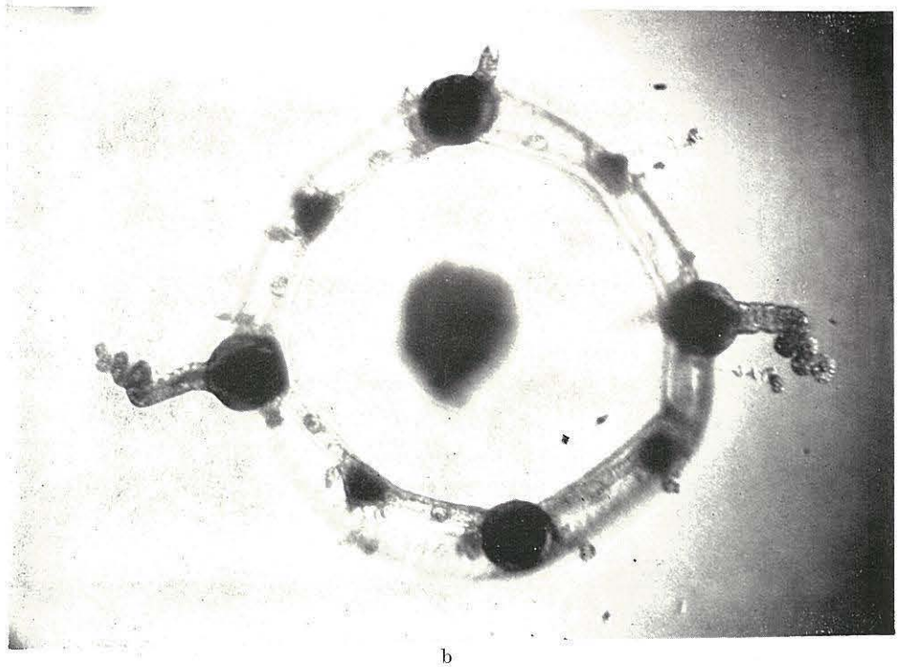
a b c

Fig. 3. Polpys and young medusa of *Eugymnanthea cirrhifera* n. sp.
a. A polyp with a bud of medusa (about 3.5 mm in length).
b. A polyp with five polyp buds and a medusa bud (about 3 mm in length).
c. A medusa soon after liberation (1.5 mm in height, and 1.5 mm in width).

side at the basal part. There are cirri on the bases of the four perradial tentacles and four tentacle bulbs (Fig. 2, and Fig. 4, a and b). The cirri were observed at both sides of these bubls or sometimes at one side of them. The cirri usually shrink extremely, or curl spirally, and when it elongates it attains a length of about 1 mm or about a half of the height of the umbrella. A flat cluster of nematocysts



a



b

Fig. 4. Medusa of *Eugymnanthea cirrhifera* n. sp. a day after liberation, showing cirri at bulbs. a. Side view ; b. Oral view.

was observed at its terminate. When the medusa was reared in the petri-dish in the laboratory by the food of the larvae of the brine shrimp for seven to ten days, the jelly of the umbrella became thicker especially in the region. The manubrium became about a half of the height of the umbrella in length, and not extend beyond the umbrella margin. In this stage of the medusa, no other distinct changes of structures of the younger form were observed in the present investigation. Unfortunatly, the medusae were not reared until the gonad became developed.

REMARKS

The structure of a commensal hydrozoan, *Eugymnanthea* sp. found on the soft parts of *Mytilus edulis* collected at Hachinohe, Aomori Prefecture, were compared with those of *Eugymnanthea inquilina* (Palombi 1935), *Mytilhydra polimantii* (Cerruti 1941), *Ostreahydra japonica* (Yamada 1950) and *Eugymnanthea ostrearum* (Mattux and Crowell 1951). The present species resembles *Eugymnanthea ostrearum* rather than the other species. When those two species were compared with each other, a distinct difference was found in the structure of their medusae. The manubrium of the present species is larger than that of *E. ostrearum*. There are cirri at the bases of perradial tentacles and tentacle bulbs in the present species, but *E. ostrearum* has no cirri. Two medusae of *Eugymnanthea* sp. which has cirri at Naples (Uchida, unpablished) resemble the medusae of the present species, but even the young medusae of the latter is far larger than the adult medusae of the former which have well developed gonad (0,7–0,88 mm in height, and 0,77–0.99 mm in width). Based on those distinct differences, the present species was detarmined to be a new species. The present writer proposes the new species name *Eugymnanthea cirrhifera* (Japanese name Curl-kurage) for the present species. The type-specimens of the present species are deposited in the Marine Biological Station at Asamushi.

SUMMARY

A new commensal hydrozoan, *Eygymnanthea* sp. was found on the soft parts of *Mytilus edulis* collected at Hachinohe, Aomori Prefecture, and its life cycle was investigated. The most characteristic structure of this species is cirrus of the medusa which have not been described until 1963. The present species is determined to be a new species for which the name of *Eugymnanthea cirrhifera* is proposed.

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